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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/588,647

06/15/2007

Kunihito Takaura

1091

9260

27649

7590

01/29/2010

MICHAEL TOBIAS

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SUITE 300

WASHINGTON, DC 20006

EXAMINER

ZHU, WEIPING

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

01/29/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/588,647	<b>Applicant(s)</b> TAKAURA ET AL.	
	<b>Examiner</b> WEIPING ZHU	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2007 and 07 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 8-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/24/2009 and 8/7/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 8-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goudarzi et al. (US Pub. 2006/0021466 A1).

With respect to claims 8-12, 14 and 15, Goudarzi et al. ('466 A1) discloses a lead-free solder paste (paragraphs [0007]-[0015]) comprising a first solder alloy powder of a Sn-Ag--In-Bi alloy, a second alloy powder of a Sn-Ag alloy as claimed in the instant claims 9 and 11, and a flux, wherein both the first and second solder alloys contain by weight 2.3-4.3% of Ag (indicating that the Ag content in the overall composition after melting is 2.3-4.3%) and the liquidus temperature (reading on the claimed main peak temperature measured by differential thermal analysis) of the first solder alloy is lower than that of the second solder alloy by not greater than 15 °C as claimed in the instant claims 8 and 15. Goudarzi et al. ('466 A1) does not specify the content of In in the overall composition as claimed in the instant claim 8 and in the first solder alloy powder as claimed in the instant claims 10, 12 and 14. However, one of ordinary skill in the art would expect that the contents of In in the overall composition and in the first solder alloy powder of Goudarzi et al. ('466 A1) would overlap the instantly claimed contents because the elements in the first and second solder alloy powders of Goudarzi et al.

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('466 A1) are the same as those in the instantly claimed first and second solder alloy powders; the contents of Ag in the first and second solder alloy powders of Goudarzi et al. ('466 A1) overlap the instantly claimed contents; and the difference in the liquidus temperatures of the first and second solder alloy powders required by Goudarzi et al. ('466 A1) overlaps the instantly claimed difference in the main peak temperatures. A prima facie case of obviousness exists. See MPEP 2144.05 I. The 0 mass % of the contents of Bi and Cu in the instant claim 8 does not require the presences of these elements.

With respect to claim 13, Goudarzi et al. ('466 A1) does not disclose that the second solder alloy is selected from a Sn-Ag-Cu alloy and a Sn-Ag-Bi-Cu alloy. However, it would have been obvious to one of ordinary skill in the art to add Cu to the second solder alloy of Goudarzi et al. ('466 A1) (i.e. the Sn-Ag alloy) as disclosed by Goudarzi et al. ('466 A1) (paragraph [0005]) in order to improve the properties of the lead-free solder as disclosed by Goudarzi et al. ('466 A1) (paragraphs [0003]-[0006]).

### ***Conclusions***

2. This Office action is made non-final. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

WZ

1/15/2010